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THE DEVELOPMENT OF SENSITIVITY TO
NONVERBAL COMMUNICATION AS IT RELATES TO
EMPATHY IN THE COUNSELING RELATIONSHIP

by

LARRY WYLLIS FERGUSON

A THESIS

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DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "The Development of Sensitivity to Nonverbal Communication as it Relates to Empathy in the Counseling Relationship" submitted by Larry Wyllis Ferguson in partial fulfillment of the requirements for the degree of Master of Education.

ABSTRACT

The purpose of this study was to test the hypothesis that a counseling course and associated practicum would effect an increase in emotional sensitivity. In order to do this a sample of graduate students in Educational Psychology, all of whom were enrolled in a counseling course and associated practicum, were chosen as the experimental group. The control group was comprised of a sample of graduate students in Educational Administration, none of whom were enrolled in a counseling course or associated practicum. Two measures of emotional sensitivity were administered to each group prior to the experimental treatment and again afterwards. These two tests consisted of instances of different emotions expressed through nonverbal modes of communication. Test One used only the vocal mode of communication whereas Test Two used the simultaneous facial-vocal modes. When the data, collected from the pre- and post-tests, were analyzed it was found that the results arising out of the use of Test One did not support the hypothesis. It was therefore concluded that a counseling course and associated practicum did not effect an increase in emotional sensitivity to vocal stimuli when these were presented in the absence of any other stimuli. The results obtained from Test Two did, on the other hand, support the hypothesis and it was concluded that a counseling course and associated practicum did effect an increase in emotional sensitivity to both vocal and facial stimuli when these were presented simultaneously.

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CHAPTER ONE

INTRODUCTION AND PROBLEM

A. Introduction

Each year aspiring counselors strive to learn the interpersonal behavior that will result in the ability to establish a therapeutic counseling relationship. This is often a frustrating quest because although the characteristics of a therapeutic relationship are amply outlined in any one of the many counseling books available, the mere intellectual awareness of these is not enough (Davitz, 1964). In addition the counselor must learn to interpret these characteristics in terms of the interpersonal behavior that will facilitate a therapeutic relationship for him (Rogers, 1957).

Rogers (1951) advises that a counseling relationship is therapeutic to the degree to which the counselor exhibits unconditional positive regard, congruence, and empathy toward his client. According to Davitz (1964), it is this last characteristic which presents the most difficulty for the counselor learning to establish a therapeutic relationship. The counselor in training is continually encouraged to be sensitive, to empathize, and to understand how the other person feels. Consequently, there is no doubt in the counselor's mind of the necessity of learning to empathize. However, according to Davitz (1964) there is considerable doubt as to how this learning can best be accomplished. There does not appear to be any clearly defined, research supported procedure that will result in the type of learning required to increase the

counselor's ability to empathize. It would appear at first blush that this learning is a highly personal thing, differing for each individual. However, it seems reasonable to assume that there are some common variables involved in learning to empathize.

The purpose of this study is to examine sensitivity to nonverbal modes of emotional communication as they relate to the counselor's ability to establish a counseling relationship characterized by empathy.

B. Problem

Counseling is, according to Rogers (1951), a one to one relationship in which the client is in a state of incongruence or distress and the counselor is attempting to help him achieve a state of congruence and reduced distress. However, before this goal can be achieved, a therapeutic counseling relationship must be established between the counselor and his client. Rogers (1951) advises that, if a counseling relationship is to be therapeutic, the counselor must exhibit unconditional positive regard, congruence, and empathy toward his client. He explains unconditional positive regard as the ability of the counselor to experience a warm acceptance of all aspects of the client's feelings and experiences; and congruence he explains as the quality of the counselor to be open and genuine in all his interactions with the client. Rogers (1951) describes empathy as the ability of the counselor to sense the client's internal frame of reference as if it were the counselor's

own. This requires that the counselor have an understanding of the client's phenomenological world, being able to sense the client's emotions without becoming entangled in these emotions himself. Only when feelings of unconditional positive regard, congruence, and empathy are experienced by the counselor towards his client and communicated to the client will a therapeutic counseling relationship be established.

Rogers' (1951) description of empathy would seem to imply the necessity of the counselor having a complete understanding of every experience the client relates to him. He must come to know what is reality for the client and how this phenomenological world affects the client's emotions. This is no simple task as the counselor must rely completely on the client's communication for any information about the client. Therefore, complete understanding of the client's communication is mandatory if the counselor is to gain the depth of insight into the client's internal frame of reference which is necessary to ensure empathy in the resulting relationship. As a result, the client's communication becomes the object of close attention by the counselor.

Christensen (1964) states that communication is a multi-level process involving the following four modes of expression: vocal, verbal, facial, and gross body movements. Each of these modes represents a category of stimuli which are derived from a communicative source. The vocal mode of communication involves all those stimuli associated with the loudness, pitch, timbre, and rate of speech. The verbal mode

involves the stimuli associated with the content of speech. The facial mode of communication includes all those stimuli associated with facial expression, while gross body movements encompass all the stimuli associated with the hands, legs, head, posture, and any other body movements used in speech. All of these modes taken together constitute the flux of stimuli involved in the communication process. Since understanding presupposes communication, it then seems logical to conclude that the ability to develop an empathic client-counselor relationship is ultimately dependent upon sensitivity on the part of the counselor to the stimuli associated with the four aforementioned modes of communication.

The counselor in training is encouraged to be sensitive to the other person's feelings. In fact, according to Davitz (1964), the counselor's first feelings of confusion about the counseling process can be traced to the task of learning how to become sensitive and emotionally understanding. Davitz (1964) sheds some light on this problem when he discusses his experiences while supervising students in a counseling practicum:

"None of the students had difficulty understanding the words clients said; often, the student clinician could give almost verbatim reports of what happened in an interview, and interpret the words of the client in any of several theoretical systems. Thus it didn't seem to be the words that were missed when a client's feelings were misunderstood; rather, what was missed seemed to be a function of the nonverbal aspects of the client's communication."

Davitz's (1964) findings are not surprising when it is considered that a counselor has had roughly sixteen years of schooling during which he has been trained primarily to attend to the content of the spoken and written word. In fact, he has been trained to attend only to the verbal stimuli in the stimulus flux with the result that the counselor initially listens to only what is said, not how it is said. It is therefore to be expected that the student counselor will be sensitive to the stimuli associated with the verbal mode of communication but will be relatively insensitive to the stimuli associated with the nonverbal modes. Thompson and Bradway (1950) support this view when they observe that:

"The inexperienced therapist is largely unaware of the nonverbal elements...."

That the nonverbal stimuli are important to understanding and the development of an empathic counseling relationship, there seems little doubt. Barbara (1963) comments on the importance of the nonverbal stimuli to complete understanding of a client's feelings and behavior when she says:

"An organism which is in conflict and tends towards psychic disorganization and the formation of anxiety will concomitantly express this state of disturbance in all areas of personality, including that of verbalization. Disturbances in communication are not only expressed in terms of the spoken or written word, but in all the interplay of hidden gestures, feelings, bodily reaction, glances, etc. which are constantly going on in dynamic human beings. An awareness of both verbal and

nonverbal factors is essential in order to arrive at a more complete understanding of human behavior."

Davitz (1964) again stresses the importance of these nonverbal stimuli when he says:

".....the nonverbal aspects of any communication, even in the highly verbal culture in which we live, are of prime importance in understanding the message expressed and thus adapting effectively to one's environment."

This is particularly true of the counseling setting where the stimulus field which constitutes the counselor's environment derives from the client's communication. If the counselor is to be well adapted to his counseling environment and exhibit appropriate response behavior towards his client, he must attend to stimuli associated with all four modes of communication. A counselor who selectively attends to only one or more but not all of these modes of communication is deriving only partial information about his client and the client's phenomenal field, and as such his counseling behavior is likely to be less effective.

It would seem to follow, then, that a counselor who attends to only the verbal mode of communication will not be aware of all the communicative information available and will be more likely to misunderstand his client's communication. This will result in only partial insight into the client's internal frame of reference and often a consequent misunderstanding of the client's emotions. This situation will inevitably preclude the possibility of an empathic counseling relationship and result, from a Rogerian point of view, in an

"untherapeutic" client-counselor relationship.

It would seem to follow from the above discussion that in learning to empathize, the counselor learns to attend to the stimuli associated with the nonverbal modes of communication as well as those associated with the verbal mode. In time, as he becomes more sensitive to the nonverbal stimuli, the counselor becomes more attentive in his perception and is able to discriminate the invariant properties inherent in these stimuli.

Gibson (1963) states that there is information in the available stimuli, and it seems logical to conclude that as the counselor becomes sensitive to these previously ignored stimuli he will derive new information crucial to the communicative process. As a result of this increased sensitivity the counselor will find he has a larger fund of communicative cues available to him from which he can derive more information, and consequently the client's communications will have become more meaningful. Now, the counselor less often misunderstands what the client is trying to communicate to him and an empathic counseling relationship becomes easier to achieve.

It can be argued, then, that a counselor's ability to empathize is dependent upon his ability to understand the client's communication. This ability to understand the client's communication is in turn dependent upon the counselor's sensitivity to the four modes of communication. As mentioned earlier the beginning counselor has, as a result of his previous educational experience, learned to focus

on only the verbal mode of communication.

It is the contention of the present writer that in learning to empathize, the counselor must learn to attend to the many hitherto ignored nonverbal stimuli. It would seem to follow that inasmuch as a counseling course and associated practicum encourage and assist the counselor to be empathic in his interpersonal relationships, they should facilitate the counselor's increased sensitivity to nonverbal cues of emotional communication. The question posed by this paper is: does a counseling course and associated practicum, such as that offered by the Department of Educational Psychology at the University of Alberta, develop in its counselors increased sensitivity to nonverbal cues of emotion? In attempting to answer this question the present study will test the following hypothesis.

Hypothesis

Participation in a counseling course and associated practicum will effect an increase in the emotional sensitivity of student counselors.

REVIEW OF RELATED RESEARCH

A. Facial Expression

Using a variety of experimental techniques, many researchers (Coleman, 1949; Hanawalt, 1944; Levitt, 1964) have concluded that feelings can be communicated accurately by facial expression alone. There is a wide difference in the accuracy of facial communication but as Davitz (1964) points out, these differences can be explained by the variety of stimuli used, the kinds of discrimination required of the subjects, individual differences in the subject's sensitivity to nonverbal cues of emotion, and the categories of emotions considered in the research.

Many of the early investigators used posed pictures as stimulus material of facial expression. Among these investigators were Feleky (1914; 1922) and Ruchmick (1921; 1936) who each developed a set of pictures with people posing for different expressions of emotion. These pictures illustrated facial expression only, and although they were used extensively by later investigators, the technique of using posed pictures as stimulus material soon fell into disfavor because of the artificiality of the stimuli and the lack of a good sampling of people who expressed the emotions in the pictures. Although the investigators using these posed pictures demonstrated a high accuracy in communicating emotional expression, their findings could not be generalized to expressions of other people. Later, Boring and Litchener (1923) developed a profile of a head which had a number of interchangeable

brows, eyes, noses, and mouths. This model, called the "Piderit Model", was used in several studies of facial expression to confirm this mode of emotional communication.

To reduce the artificiality of their stimuli, a number of investigators have used photographs of unposed, spontaneous facial expressions. It is interesting to note that experimenters such as Munn (1940) and Hanawalt (1944) found no difference in the accuracy of communication between the posed and unposed pictures. It seems that an important limitation of still photographs is the loss of information possibly conveyed by changes in facial expression over time.

Recently, researchers have utilized motion pictures in studying the communication of emotion by facial expression. Early studies by Dusenberry and Knower (1938) followed by Coleman (1949) provided promising methodological leads in this direction. They found that emotional meaning can be communicated via the facial mode with a high degree of specificity. More recently, a study by Levitt (1964), reported in the book The Communication of Emotional Meaning, used a motion picture film to demonstrate a significant relationship between abilities to identify vocal and facial expressions.

B. Vocal Expression

The investigation of vocal expression as a mode of communication has been a somewhat more recent undertaking. To facilitate the study of the communication of emotional meaning by vocal expression,

three major techniques have been used to eliminate or control the verbal information conveyed by speech. Assuming that neither letters nor numerals carry verbal information relevant to emotional communication, many experimenters such as Knower (1945), Pfaff (1953), Thompson and Bradway (1950), and Davitz and Davitz (1959) have used as stimuli the recitation of speakers attempting to express feeling merely by reciting the alphabet or counting. Judges were found to identify the emotional meaning carried by each expression far beyond chance expectation. Other researchers such as Pollack et al (1960), have demonstrated the same findings using standard verbal content that presumably was emotionally neutral. Using this technique, the investigators had speakers recite the same few sentences while trying to express different feelings, so that whatever emotional meaning is communicated depends upon vocal rather than verbal cues.

In recent years, researchers such as Soskin and Kauffman (1961) have capitalized on electronic filtering techniques which substantially decrease the verbal content of tape recorded utterances without destroying the simultaneous emotional communication carried by certain vocal characteristics of the speech. They demonstrated experimental verification of the generally held view that voice sounds alone, independent of the semantic components of vocal messages, carry important clues to the emotional state of a speaker. Thus, regardless of the technique used, the majority of studies thus far reported in the literature agree that emotional meanings can be communicated accurately by vocal expression.

C. Individual Differences and Learning

Almost all researchers (Davitz and Davitz, 1959a; Knower, 1945; Starkweather, 1956) studying nonverbal communication of emotional meaning have reported marked individual differences in both the speaker's ability to express emotional meaning nonverbally and the listener's ability to accurately identify expressions of nonverbal emotional communication. Davitz and Davitz (1959a) confirm these earlier findings when they report striking individual differences among both speakers and listeners employed in their study. Although little is known about how innate factors affect either the speaker's ability to express emotional meaning or the listener's ability to identify, it has been suggested by early investigators (Allport, 1924; Guilford, 1929; Mattis, 1964) that learning plays an important role in the process of identifying nonverbal expressions of emotion.

Allport (1924) found that the ability to read faces and to name the expressions improves slightly with only fifteen minutes of training in the analysis of faces. Similarly, Guilford (1929) found that with subjects who are given training in analyzing facial expression through a period of ten days with a test every other day, the average gain in ability was fifty-one percent (51%) over the original ability. More recently Mattis (1964) confirmed these earlier findings, demonstrating an increased sensitivity to nonverbal cues of emotion following a brief training period. Thompson and Bradway (1950) attempted to increase counselor sensitivity to the nonverbal aspects

of therapy by employing content-free interviews as a teaching technique. They had counselors assume the role of counselor and client, and asked these two participants to enact each of five emotionally charged situations while employing the recitation of numbers instead of words. Other counselors observed and recorded their impression of affective interchange. The investigators found that this teaching technique afforded them the opportunity of forcing counselors to examine the intangibles of communication which are so foreign to their academic experience. Although no empirical evidence was given in support of their conclusions, the investigators did report that as a result of employing this technique, the counselors were observed to be paying greater consideration to the feelings revealed by further participants.

Thompson and Bradway (1950) have commented that practicing psychotherapists are becoming increasingly aware of the nonverbal aspects of therapy which are independent of the content of the interview. The more recent writings of such men as Davitz (1964), Soskin (1961), and Starkweather (1961) support this view and yet there has been, except for Thompson and Bradway's (1950) research, little attempt to develop counselor training programs that will directly effect an increase in sensitivity to these nonverbal aspects of therapy. It remains for further research, therefore, to discover those kinds of experiences which influence a more generalized ability to understand emotional communication. With this in mind, the present writer will attempt to ascertain whether participation in a counseling course and

associated practicum will effect an increase in the emotional sensitivity of student counselors.

CHAPTER TWO

THE PROBLEM

The first step in the process of solving a problem is to identify the problem. This involves a careful analysis of the situation and a determination of the goal. Once the goal is identified, the next step is to develop a plan. This plan should outline the steps that need to be taken to achieve the goal. The plan should also take into account any constraints or limitations that may be present. Once the plan is developed, the next step is to execute the plan. This involves carrying out the steps outlined in the plan and monitoring progress. Finally, the last step is to evaluate the results. This involves comparing the actual results with the expected results and determining whether the goal has been achieved.

CHAPTER THREE

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The third step in the process of solving a problem is to identify the problem. This involves a careful analysis of the situation and a determination of the goal. Once the goal is identified, the next step is to develop a plan. This plan should outline the steps that need to be taken to achieve the goal. The plan should also take into account any constraints or limitations that may be present. Once the plan is developed, the next step is to execute the plan. This involves carrying out the steps outlined in the plan and monitoring progress. Finally, the last step is to evaluate the results. This involves comparing the actual results with the expected results and determining whether the goal has been achieved.

THEORETICAL ORIENTATION

A. Theory

It has been stated earlier that a counselor's ability to empathize is limited by the extent to which he understands his client's communication. As a consequence, this communication becomes the object of close attention by the counselor who is learning to empathize. The counselor becomes more sensitive to the stimulus flux associated with the client's communication and learns to discriminate more variables in this stimulus flux. This results in new information being available to the counselor and the client's communication becomes more meaningful.

It is the contention of the present writer that in becoming more sensitive to the stimulus flux the counselor is learning to attend and to discriminate hitherto ignored stimuli associated with the nonverbal modes of communication. Gibson (1963) explains how attention to more categories of stimuli enhances the counselor's ability to empathize when he states:

"There is information in available stimuli."

Thus, as the counselor becomes sensitive to the hitherto ignored nonverbal stimuli, he will gain new information and his client's communication will become more meaningful to him. This should result in increased empathy on the part of the counselor.

Gibson (1959) explains this type of learning when he says:

"The stimuli of which perception is a

function undoubtedly change with practice; that is, after repeated encounters with them. Previously ineffective stimulation becomes effective; the individual can respond to variables not previously responded to. More variables in the stimulus flux and variables of a higher order become discriminated. Phenomenally, the world contains more different objects and more differences between objects than it previously did; it becomes more differentiated and therewith fuller of meaning."

Gibson calls this type of learning "perceptual learning" and says that it is taken as being the activity of achieving and improving contact with the environment and developing appropriate response behavior. Although he speaks primarily in terms of the planes and edges of objects in a physical environment, he does expand his thinking to include a social environment involving the nonverbal and symbolic stimuli of communication.

Christensen (1964) also discusses the type of learning that leads to an improved empathic relationship in his interpretation of a perceptual theory of behavior. He postulates that behavior is largely a function of the stimuli to which an individual selectively attends and that the stability and direction of behavior can be accounted for in terms of this selective attention. He also states that if an individual is to maintain a good relationship with his environment he must be in close contact with it through attention to the variety of environmental stimuli that are relevant to this relationship. Christensen (1964) hypothesizes that an individual who attends to only one of the categories

from the flux of stimuli available will derive only partial information about his environment, and his behavior is likely to be maladaptive. This would seem to describe the counselor who, while attending exclusively to the verbal stimuli, misses the nonverbal aspects of his client's communication thereby reducing the meaningfulness of this communication. The counselor is now more likely to lack insight into his client's internal frame of reference and not be capable of empathizing.

How, then, does a counselor learn to respond to previously ineffectual stimuli and discriminate the more subtle variables in the stimulus flux? This is accomplished, according to Gibson (1963), by attentive adjustment of the sense organs and by the "education of the attention". This explanation gives rise to still another question. How does one "educate the attention"? Luria (1961) sheds some light on this question in his discussion of the role of speech in the regulation of behavior. In his discussion on regulating behavior according to the "rule of force" of stimuli, he states that:

"Simple experiments can demonstrate how verbal association resulting from speech gradually come to predominate and substantially modify the relative natural strength of the stimuli."

He goes on to explain how speech can, in fact, re-shape a person's significant perception of a compound stimulus by modifying the rule of force and making the physically weaker component predominate.

By applying Luria's (1961) theory to counselor training, it can be seen that a counselor's attention is directed to the more subtle

communication cues by his supervisor's pointing out and labelling of these cues. By helping to define the required cues, the supervisor's overt speech becomes internalized¹ by the counselor as covert speech. In the future this covert speech directs the counselor's attention to cues hitherto undifferentiated. These covert directions to attend to certain stimuli become self-directing for the counselor and result in changed perception. Thus, it would seem that practice and a patient, perceptive supervisor are two important prerequisites if a student is to develop a degree of proficiency as a counselor.

B. Operational Definitions

meaning ----- the label a listener applies to a given expression
is said to define the meaning that expression has
for him.

emotional sensitivity ----- a listener is said to be sensitive to
the extent to which he achieves a high score on
Tests One and Two (described earlier). These are
measures of sensitivity to nonverbal cues of
emotion associated with the vocal and facial modes
of communication.

¹This is being used in an Ellis sense. By internalized speech Ellis means thinking which includes both cognitive and emotional components.

counseling ----- a one to one relationship in which at least one of the parties has the intent of promoting the growth, development, maturity, improved functioning, and improved coping with life of the other (Rogers, 1961).

CHAPTER FOUR

EXPERIMENTAL DESIGN

A. The Sample

The subjects for this study were graduate students in the Faculty of Education at the University of Alberta. The sample chosen as the experimental group consisted of nineteen students, one female and eighteen males, in the counselor training program. All these subjects were enrolled in a graduate course and associated practicum. This course is designed to improve the student counselor's ability to establish a therapeutic counseling relationship.

The sample chosen as the control group consisted of thirty-two students, one female and thirty-one males, in the Educational Administration training program. Of the original thirty-two subjects in the control group, two were deleted because of either having dropped the course of studies or being unavailable for retesting. This reduced the number in the sample to thirty.

B. Test Instruments

For the purposes of this study it was necessary to measure the counselor's sensitivity to the nonverbal modes of communication exclusive of the verbal mode. In order to do this, it is necessary to control or cancel out the effect of the verbal stimuli. This was done by using a content-standard technique in which the same two lines of dialogue were used to express each emotion. In Test One the

verbal stimuli (content) were held constant and only the vocal mode of communication was manipulated to express each emotion. In Test Two the verbal stimuli were again held constant and the nonverbal modes of communication associated with the vocal tone and the facial expression were manipulated to express each emotion. The ability to identify the emotions expressed through these nonverbal modes was then defined as the total number of emotions correctly identified, and the resulting scores were called emotional sensitivity scores.

1. Test One

The first instrument, which comprised Test One, was developed by Dr. Joel Davitz of Teacher's College, Columbia University, New York, New York. It was developed for the purpose of testing ability to identify vocal expression of emotional meaning in a study he was doing on perceptual and cognitive correlates of emotional sensitivity as reported in his book, The Communication of Emotional Meaning. This instrument consisted of a forty-five item tape-recording of expressions of eight different emotional meanings plus five nonemotional or neutral items. A number of speakers tape-recorded recitations of the same three sentence paragraph in an attempt to communicate the eight different emotional meanings. The paragraph,

"I am going out now. I won't be back
all afternoon. If anyone calls, just
tell them I'm not here."

was selected for its apparent neutrality so far as specific emotional

content was concerned. In addition to a neutral expression, each speaker expressed each of the following emotions: affection, anger, boredom, cheerfulness, impatience, joy, sadness, and satisfaction. This produced a pool of one hundred and ninety (190) items. Those items chosen to make up the final instrument were selected on the basis of first having a plurality of seventy-three subjects agreeing with the meaning intended by the speaker, and second of being the five most discriminating items for each category of meaning as determined by an item analysis of the responses of ninety-one subjects. A test-retest reliability of 0.82 was obtained for the final test with a sample of thirty-eight subjects. An additional reliability measure was obtained for this instrument as the result of a testing program carried out on a group of twenty-seven students enrolled in an undergraduate Educational Psychology course at the University of Alberta. The test-retest reliability coefficient obtained from this testing program was 0.55. The time interval between the pre- and post-test was three months.

2. Test Two

Research papers by Coleman (1949) and Levitt (1964) who used motion picture film to demonstrate that emotional meaning can be communicated via the facial mode of communication were the basis of the decision to construct the second instrument. It was developed by the author with the assistance of Professor T. Peacocke and the Drama

Department along with the Audio-Visual Department. This instrument consists of a 16 millimeter film containing thirty-seven instances of ten different emotions. These emotions are expressed solely through the facial and vocal modes of communication. The verbal content and degree of exposure in filming is held constant for each emotional instance so that the only communicative cues available are those of facial expression and vocal tone. The ten emotions are affection, amusement, anger, boredom, despair, determination, disgust, fear, impatience, and joy. A set of scripts (Appendix A), one for each of the emotions to be attempted by the speakers, was composed. The purpose of these scripts was to help elicit from the speakers the required emotion. To facilitate this, an appropriate setting in which the speaker was an involved party, was described for each emotional instance. Within the framework of each setting the script allowed for a verbal exchange between the speaker and another person. This verbal exchange was emotionally charged and allowed the speaker to "work up" to the dialogue of emotional content as set down in each script. Embodied in the context of each of these dialogues were a standard two lines:

"There is no other answer. You've asked me
that question a thousand times and my
reply has always been the same."

These standard lines were the same as those used by Davitz (1964) in a similar instrument developed for a study of auditory correlates of vocal expression of emotional meaning.

The scripts were then edited by Professor Peacock and his

suggestions incorporated. Professor Peacocke suggested seven experienced actors and actresses who agreed to act as speakers in the film which was planned. The filming was done by the Audio-Visual Department under the direction of Professor Peacocke.

Each actor or actress was seated facing the camera while a colleague seated out of view, using a combination of the prepared script and his or her own innovation, attempted to elicit the particular emotion being undertaken. When Professor Peacocke was satisfied with the authenticity of emotional expression, he signalled the waiting cameraman who then began filming. This procedure was duplicated with each actor or actress for each of the initial thirteen emotions filmed. The audio-visual tape that resulted from this procedure was then edited and only that portion of the tape which contained the standard two lines of dialogue was marked off to be extracted from each segment of emotional expression. These segments containing the standard two lines of dialogue were then transferred to a 16 millimeter film². This resulted in a film containing ninety-one instances of emotion. Since the verbal content was held constant and only the speaker's head and shoulders were filmed, the only cues of emotion available on the final film were those communicated via the facial and the vocal modes of communication.

²The required segments were transferred from the video-tape to a 16 millimeter film by a simple process in which the audio-visual tape was projected onto a television screen and then the designated excerpts were filmed.

This test instrument was then validated (Appendix B) by having three authorities in the field³ view each instance of emotion on this film and respond to each by picking, from amongst the alphabetized list of thirteen emotions, that one which they felt was being expressed. The response to each item or instance was analyzed for each of the three professional judges and only those items agreed upon by all three judges were kept. The other items were discarded. Accordingly, the film was edited and respliced into a continuous film containing forty-five of the original ninety-one items. This instrument was then subjected to another validity screening (Appendix B) by the same judges who responded to each item as earlier described. Again, only those items on which complete agreement was registered by the three independent judges were kept as the final test instrument. As a result of this stringent validation screening, three emotions were completely deleted from the original list of thirteen. "Surprise", it was found, was too difficult to sustain through the two standard lines and this emotion was deleted as being unauthentic. The emotions admiration, love, and affection were found to be indistinguishable from one another and since they appeared to represent one emotional area, they were all subsumed under the heading of affection. As mentioned earlier, the final test instrument consisted of thirty-seven instances of emotion involving ten different emotions expressed by seven different speakers.

³Dr. H. Zingle; Dr. D. Fair; and Professor T. Peacocke

The test-retest reliability measure was obtained for this instrument during the same testing program employed to establish a reliability coefficient for Test One. The same group of twenty-seven students enrolled in an undergraduate Educational Psychology course at the University of Alberta were used as subjects with the same time interval of three months between the pre- and post-tests. The reliability coefficient obtained was 0.79.

C. Procedure

The research design necessitated a pre- and post-test of emotional sensitivity as measured by the two tests of nonverbal sensitivity. The two tests of nonverbal sensitivity were administered to both the experimental and the control group as a pretest in the month of October, 1965, approximately one month after the start of each group's respective program. The post-test was administered to the experimental and the control group towards the completion of their academic year of studies. This was done in the month of April, 1966.

The procedure adhered to in administering the two tests was as follows. The day prior to the testing period the answer sheets for both tests were given to the subjects (Appendices E and G) and they were asked to familiarize themselves with these sheets and to attempt to commit to memory each list of emotions. When the subjects arrived, the tester insured that each had an answer sheet for both tests.

Next, the tester handed out a sheet of instructions to each subject. These instructions (Appendix D) explained each test to the subject, advising that each emotion could appear once, more than once, or not at all. The subjects were cautioned to work quickly as there would be no replays. Instructions for the administration of both tests are found in Appendix C. The tape for Test One was then started and run through without any pause. The subjects were expected to respond during the eight second delay which takes place after each item.

At the completion of this test there was a pause while the room was darkened. The subjects were next advised to prepare for the second test. The film for Test Two was then started. The first item of each new actor or actress was followed by a thirty second pause while the subsequent items of the same actor or actress were followed by a twenty second pause. These time intervals were employed as a result of previous experience with the film in the validation screenings. It was found during these screenings that a time interval of twenty seconds following each item provided adequate time for the viewer to respond except when a new speaker was introduced on the screen. In these instances it was found that a time interval of thirty seconds was adequate for the subject to respond to the item. To ensure that each response was marked in the appropriate answer space, the number of each item was called out preceding its showing. The score on each test was arrived at by simply counting

- 32 -

up the number of emotions correctly identified. (Answer keys for Tests One and Two are in Appendices F and H.)

CHAPTER FIVE

STATISTICAL TREATMENTS AND RESULTS

The data accumulated from pre-treatment and post-treatment administrations of the measuring instruments used in this study were subjected to statistical analysis in an effort to ascertain the tenability of the hypothesis regarding the effect of a counseling course and associated practicum on the emotional sensitivity of counselors. Two measures of emotional sensitivity were used in testing this hypothesis and these will be presented separately.

A. Test One

This test consisted of a sound tape containing forty-five instances of nine different emotions expressed solely in the vocal mode of communication. Test One was administered to both the experimental and control group before and after the experimental period. The raw data (Appendix I) were tabulated and then the means, standard deviations and correlated "t" values were calculated for each group. These figures are presented in Table I.

It may be seen from Table I that the "t" value⁵ of 1.40 obtained for the experimental group was not large enough to demonstrate a significant change in means and it may therefore be said that no increase in emotional sensitivity occurred in this group over the experimental period.

⁵For df=18, a "t" value equal to, or greater than, 1.73 is required for significance at the five percent level.

TABLE I

MEANS, STANDARD DEVIATIONS,
DEGREES OF FREEDOM, OBTAINED "t" VALUES
OF PRE- AND POST-TREATMENT SCORES OF
EMOTIONAL SENSITIVITY FOR BOTH
THE EXPERIMENTAL AND CONTROL GROUP
AS MEASURED BY TEST ONE

	EXPERIMENTAL GROUP		CONTROL GROUP	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Mean	$\bar{X}_1=18.63$	$\bar{X}_2=20.11$	$\bar{X}_1=19.00$	$\bar{X}_2=20.30$
Standard Deviation	S.D. ₁ = 4.52	S.D. ₂ = 4.98	S.D. ₁ = 3.90	S.D. ₂ = 4.11
Degrees of Freedom	18		29	
Obtained "t" Values	1.40		1.66	
Significance	Not Sig.		Not Sig.	

It is evident from Table I that the "t" value⁶ of 1.66 obtained for the control group was also not large enough to claim a significant difference in means, and it may therefore be concluded that no increase in emotional sensitivity occurred in this group over the experimental period.

⁶For df=29, a "t" value equal to, or greater than, 1.70 is required for significance at the five percent level.

The hypothesis that a counseling course and associated practicum will effect an increase in emotional sensitivity to vocal stimuli alone was not upheld.

B. Test Two

This test consisted of a 16 millimeter movie film containing thirty-seven instances of ten different emotions expressed simultaneously in the facial and vocal modes of communication. Test Two was administered to both the experimental and control group before and after the experimental period. The raw data obtained from this testing (Appendix I) were then analyzed and the means, standard deviations, and correlated "t" values were calculated for each group. These figures are presented in Table II.

It can be observed from Table II that the obtained "t" value⁷ of 2.62 was sufficiently large enough to demonstrate the difference in means to be significant at both the five and the one percent levels of confidence. Thus it can be said that an increase in emotional sensitivity occurred in the experimental group over the experimental period.

It can be seen that the "t" value⁸ of 1.59 obtained for the control group, shown in Table II, was not large enough to show a significant difference between means and, again, it can be said that no increase in emotional sensitivity occurred in this group over the experimental period.

⁷For df=18, "t" values equal to, or greater than, 1.73 and 2.55 are required for significance at the five percent and one percent levels respectively.

⁸For df=29, a "t" value equal to, or greater than, 1.69 is required for significance at the five percent level.

TABLE II

MEANS, STANDARD DEVIATIONS,
DEGREES OF FREEDOM, AND OBTAINED "t" VALUES
OF PRE- AND POST-TREATMENT SCORES OF
EMOTIONAL SENSITIVITY FOR BOTH
THE EXPERIMENTAL AND CONTROL GROUP
AS MEASURED BY TEST TWO

	EXPERIMENTAL GROUP		CONTROL GROUP	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Mean	$\bar{X}_1=20.00$	$\bar{X}_2=21.84$	$\bar{X}_1=22.07^{*9}$	$\bar{X}_2=22.83$
Standard Deviation	S.D. ₁ = 4.12	S.D. ₂ = 3.87	S.D. ₁ = 2.52	S.D. ₂ = 3.66
Degrees of Freedom	18		29	
Obtained "t" Values	2.62		1.59	
Significance	$p < 0.01$		Not Sig.	

The hypothesis that a counseling course and associated practicum will effect an increase in emotional sensitivity to simultaneous vocal-facial stimuli was upheld.

C. Conclusions

Based upon all the data obtained from pre-treatment and post-

^{*9} It was observed that there was a significant difference between the experimental and control group means on the pretest but no reasonable explanation could be found for this difference.

treatment administrations of the evaluative measures of emotional sensitivity, the following conclusions seem most plausible to the writer:

1. A counseling course and associated practicum does not effect an increase in emotional sensitivity as measured by a test of sensitivity to vocal cues of emotional expression.

2. A counseling course and associated practicum does effect an increase in emotional sensitivity as measured by a test of sensitivity to simultaneous vocal-facial cues of emotional expression.

CHAPTER FIVE

5.1. INTRODUCTION

The first part of this chapter is devoted to a general discussion of the various methods of solving the problem of the motion of a particle in a potential field. In the second part, the method of the calculus of variations is applied to the problem of the motion of a particle in a potential field.

The method of the calculus of variations is a powerful tool for the solution of many problems in physics. It is based on the principle of least action, which states that the motion of a particle is such that the action is a minimum. This principle can be used to derive the equations of motion of a particle in a potential field.

CHAPTER SIX

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The method of the calculus of variations is a powerful tool for the solution of many problems in physics. It is based on the principle of least action, which states that the motion of a particle is such that the action is a minimum. This principle can be used to derive the equations of motion of a particle in a potential field.

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DISCUSSION AND IMPLICATIONS

A. Discussion

It can be seen from the conclusions presented in the previous chapter that although the hypothesis was supported by the data obtained from Test Two (facial-vocal), it was not supported by the data obtained from Test One (vocal).

In considering the aforementioned conclusions, it should be kept in mind that the degree of reliability of Test One was left somewhat in doubt when the present investigator obtained a test-retest reliability measure of 0.55 as compared to the much higher one of 0.82 earlier reported by Davitz (1964). The lower reliability coefficient which is reported by the present investigator is not surprising when considered in light of the findings reported by Levitt (1964) who reported that facial communication was distinctly more effective than vocal communication and that simultaneous vocal-facial communication was superior to either one alone. The percentage correct figures reported by Levitt (1964) for the vocal mode was 46.75 as compared to 59.13 for the simultaneous vocal-facial mode. These figures compared very closely with those of 44.7 for the vocal mode and 59.1 for the simultaneous vocal-facial mode obtained by the present investigator (Table III).

In the present experiment a different test was used to measure sensitivity to each of the vocal and combined vocal-facial modes of communication. Therefore any comparison of the percentage of correct

TABLE III

THE PERCENTAGE CORRECT SCORES
OBTAINED BY BOTH THE EXPERIMENTAL
AND CONTROL GROUP ON THE TESTS OF
SENSITIVITY TO THE VOCAL MODE OF COMMUNICATION
AND THE SIMULTANEOUS VOCAL-FACIAL MODE
OF COMMUNICATION

	EXPERIMENTAL GROUP		CONTROL GROUP	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Vocal	41.4%	44.7%	42.2%	45.1%
Vocal - Facial	54.1%	59.1%	59.7%	61.8%

responses to emotion in the vocal mode with that in the facial-vocal modes of communication, such as is found in Levitt's (1964) study, requires that a generalization be made from Test One to Test Two. This was not necessary in Levitt's (1964) study as the same instrument was used for both measures. Despite the dissimilar research designs used in each study, the results of the present study do tend to support Levitt's (1964) findings. These findings would suggest that Test One, consisting solely of the vocal mode of communication, does not emit sufficient communicative cues and is consequently insensitive to all but very large changes in emotional sensitivity. Assuming, then, that the combined facial-vocal measure is a more sensitive one, it may be concluded that at least some support for the hypothesis has been obtained.

Moreover, since in the present study the investigator was

interested in the practical aspects of the counseling setting, the facial-vocal instrument is the more appropriate measure. The vocal instrument is less appropriate because it structures a situation that would, in all probability, not occur in a counseling situation where there is always more than one mode of communication operating.

B. Implications

It has been suggested by Thompson and Bradway (1950) that a measure of sensitivity to nonverbal cues of emotion may have value as a device for screening applicants for training in counseling. This suggestion was prompted by their observation that the top three students picked as having the greatest aptitude for doing psychotherapy were also the three students with the highest number of correct responses to the content-free interviews which were being used as a teaching technique. Their observation and the suggestion arising from it must be viewed with caution however as no data were given to support their observation.

As data from the present study were available, an adjunctive study was carried out to investigate the relationship between the ability to counsel and emotional sensitivity to nonverbal cues of emotion as suggested by Thompson and Bradway (1950). A member of the counseling department from which the experimental sample was drawn ranked the counselors according to their ability to counsel as indicated by their practicum grades. These same counselors were then ranked according to the number of correct responses to nonverbal cues of emotion presented

in Test Two of this study. A Spearman coefficient of rank correlation was calculated to determine the relationship between the two variables described above. A " ρ " coefficient of 0.39 was obtained which was significant at the 0.05 level of confidence.

Although the small amount of variance accounted for in this relationship does not encourage the use of a measure of sensitivity to nonverbal cues of emotion as a means of screening applicants for training in counseling, it does point out an area for further research.

Similarly, although a comparison of the percentage correct scores on Test One (vocal) with those of Test Two (facial-vocal) tended to support Levitt's (1964) findings, it would be interesting to replicate this part of his work using Test Two to study the relationship between the effectiveness of the vocal, facial and facial-vocal modes of communication. This could be facilitated by exposing the subjects to only the audio (vocal) part of Test Two first, then to only the visual (facial) part of the same test, and finally to both the visual and audio simultaneously.

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A P P E N D I C E S

APPENDIX A

Scripts for the Preparation of Test Two

A. Admiration

You are seated in the front row of a large music hall and you suddenly become aware of the hushed silence around you. The music begins to stir you. He plays softly, delicately, catching you up in the emotional web he is creating. The crowd is transfixed as the slow crescendo carries them up to a climatic height. The pianist seems no longer like your friend but more magician-like. He ends in a burst of emotion and as his hands fall spent, the crowd reacts with a roar of applause. John takes a bow and hurries backstage and down to where you are seated. As he approaches he asks in a whisper, "How was I?" and you reply, "What can I say? You were magnificent. There is no other answer. You've asked me that question a thousand times and my reply has always been the same. I am continually amazed by your depth of expression."

B. Affection

It is late at night and everything is quiet. You are just about to retire when you hear your young daughter cry out in her sleep. You hurry to her room and find her standing up in her crib, wide-eyed and frightened. She whimpers when she sees you and holds out her arms. You gather her in, saying, "It's only a dream, darling and everything is alright now." "Is Mommy going away?" she asks. "No, Mommy will never go and leave you. There is no other answer. You've asked me that question a thousand times and my reply has always been the same. Mommy loves her little girl."

C. Amusement

It is a nice warm, sunny day. The grass is freshly cut and there is a pleasant odour in the air. Life really seems good. You sit down in a deck-chair with a bottle of beer and watch your young son and his little beagle pup playing on the lawn. He runs up to you, climbs on to your knee, turns his freckled face up to you and asks, "Daddy, did Mommy swallow a watermelon seed?" "Ha, ha, a watermelon seed. No, son, your Mommy is have a baby brother for you. There is no other answer. You've asked me that question a thousand times and my reply has always been the same. A watermelon seed--what an imaginative little rascal you are."

D. Anger

It is a hot, humid day. Your clothes are sticking to you and your skin feels hot and prickly. You've been driving for what seems an eternity and the never-ending road continues to disappear into a haze of heat waves with no relief in sight. Your wife is no longer speaking to you and the kids are hot and irritable. You try to be patient with them but they continue to whine and quarrel with one another. Again the whining and one asks, "When are we going to stop?" You answer, "Shut up. I don't know. There is no other answer. You've asked me that question a thousand times and my reply has always been the same."

E. Boredom

It's another hot day and again there is nothing to do. You sit there waiting the hours out, wishing something would happen. The town street lays stretched out before you, it's stark outline broken only by the shapeless, irregular contour of a few old houses. Like the landscape, you feel heavy and laden; your mind moves slowly and you find yourself listlessly counting the days until school starts again. The screen door slams behind you and as your brother slumps down in the chair beside you, he asks, "What are you going to do today?" "I don't know. There is no other answer. You've asked me that question a thousand times and my reply has always been the same."

F. Despair

You are sitting in a big, cold, leather chair as the gathering darkness invades the room. Night falls and the cool air makes you shiver. Still you sit wondering, your mind stunned by the tragic death of those you loved. A part of you asks over and over again, "Why? Why?" Unbidden, your misery and despair is given voice and you answer, "Why? Why does any tragedy have to take place? Why do the innocent, the kind, the trusting always suffer the hardest blows? They lose so much because they have so much to lose and so much of themselves to give. There is no other answer. You've asked me that question a thousand times and my reply has always been the same. The meek will not inherit this earth."

G. Determination

A board meeting and you are discussing the case of an employee who has been caught stealing. Even though the employee is an old friend, there is no alternative but to fire him. It hurts you to do this but he has disappointed you.

Your secretary, knowing how you feel, asks, "Is there nothing else that can be done?" You wish there was, but you reply, "I must fire him. There is no other answer. You've asked me that question a thousand times and my reply has always been the same. He must go."

H. Disgust

You have been going over the same material time and time again with this particular boy. He sits there like a huge lump of wet clay staring at the board, his face blank. Then he turns to you and asks, "Is two the square root of nine?" You look at him in complete disgust, and you reply, "What can I say? There is no other answer. You've asked me that question a thousand times and my reply has always been the same. The square root of nine is three."

I. Fear

Imagine yourself and your family fleeing to the mountains in the wake of a terrible onslaught of nuclear bombing. A huge black cloud has developed and is spreading and gaining on you. You realize that you cannot outrun it and that the terrible heat and radiation means death. Your wife asks, "Is there nothing we can do? My God! Look! It's coming right at us. We are doomed!"

"There is no other answer. You've asked me that question a thousand times and my reply has always been the same. We can only wait and die."

J. Impatience

The workshop--you're doing a delicate piece of woodwork that demands close attention. You've just spoiled one piece of wood and you are trying to be very careful with this last piece. You set the chisel and are just starting to shave off the first layer when your son's shrill voice cuts through your attention like a hot iron. He asks, "Where are the screws, Daddy?" and you reply in exasperation, "There is no other answer. You've asked me that question a thousand times and my answer has always been the same. There aren't any."

K. Joy

You're standing in a crowd waiting for the winning ticket to be drawn. You really don't think you'll win but still you check the numbers on your ticket stubs again. He withdraws his hand from the drum, holds up his hand and reads out the numbers. You feel numb. It was your number! You yell and you feel yourself being propelled up to the stage by helping hands. You're on the stage and the man is announcing your name when the realization comes. You've won twenty thousand dollars. He asks what you are going to do with your money. You feel like screaming -- twenty thousand -- a new car, new clothes, a trip. "You ask me what I am going to do? I'm going to spend, spend, spend. There is no other answer. You've asked me that question a thousand times and my reply has always been the same. I'm going to spend and spend and spend."

L. Love

A troop train and you are saying good-bye to your wife and family. The conductor has called "all aboard" and you are saying your last good-byes. You kiss each child and then turn to your wife. She comes into your arms, tears in her eyes and asks in a tremulous voice, "You'll be back? You won't forget us?" You reply as you draw her nearer, "I love you, with all my heart I love you. There is no other answer. You've asked me that question a thousand times and my reply has always been the same. I'll only be a letter away and my thoughts will always be with you."

M. Surprise

Evening--everything is quiet, the lights are low except for one reading light on the desk. In the background there is the soft, muted sound of a grandfather clock tick-tocking the still hours of the night away. It acts as a cadence for the thought processes of the pensive reader as he sits hunched over his book. He is completely lost in the opiate of thought and doesn't notice his wife entering the room in slippered feet. Suddenly his solitude is shattered by the shrill voice of his disturbed, demanding wife asking, "Don't tell me you have to study this late?"

"Studying--yes, there is no other answer. You've asked me that question a thousand times and my reply has always been the same. You know I must study."

The following information is being provided for your information and is not intended to be used as a basis for any action. It is the policy of the Department of Health and Human Services to provide information to the public in a timely and accurate manner. The information is being provided for your information and is not intended to be used as a basis for any action. It is the policy of the Department of Health and Human Services to provide information to the public in a timely and accurate manner.

APPENDIX B

Summary of Results of
Validation Screenings of Test Two

1. First Screening
2. Second Screening

The results of each of the two validation screenings are summarized on the following two forms. It should be noted that each item has the number 1, 2 or 3 opposite the emotions chosen by each of the three judges. These numbers indicate the number of judges who responded to that item by choosing the particular emotion indicated. Only those items which had a total of four or more judges over the two screenings registering agreement on the correct emotion were retained as suitable for the final test instrument. Those items which were retained for that purpose are circled.

1. Agreement After First Validation Screening

[illegible][illegible][illegible]

2. Agreement After Second Validation Screening

	1	2	3	4	(5)	(6)	(7)	(8)	(9)	(10)	11	(12)	(13)	(14)	(15)
Affection			1							2	1				
Amusement			1			2				1	1	3		1	
Anger		2					1						1		
Boredom	1														
Despair					3			2							3
Determination				3				1			1		1		
Disgust	1						2						1		
Fear															
Impatience	1	1							3						
Joy			1			1								2	

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Affection				3	3	3									
Amusement								2							
Anger	1	1	3				1			2					
Boredom													2		
Despair												3			3
Determination	1	2					2								
Disgust										1			1		
Fear									3						
Impatience	1										3				
Joy								1						3	

[illegible]

APPENDIX C

Instructions for the Administration of Tests One and Two

Set the projector and tape recorder up before the subjects arrive. To insure the quality of reproduction, adjust the two instruments with respect to volume and clarity before each testing period. In setting up the tape recorder, adjust the tape so as to omit the instructions that precede the actual test items.

Insure that each student has an answer sheet for each test-- the first test using the sound tape has an answer sheet consisting of nine different emotions; the second test using an audio-visual film has an answer sheet consisting of ten different emotions. Next, hand out the page of test instructions and read this carefully aloud with the students. Clarify any points that arise.

Test One. Reminding the subjects to use the Test One answer sheet with nine emotions, start the tape and proceed through the test without pause. There is approximately an eight second pause between each item that will allow time for the subjects to make their response.

Test Two. Start the film. Call out the number of the item before each instance. Allow thirty seconds for the first item of each actor and twenty seconds for each subsequent item as time for the subjects to make their response. This will require that items #1, #8, #12, #20, #30, #33, and #39 be followed by a thirty second pause, all other items by a twenty second pause.

Upon completion of both tests ask the subjects to sign their name, date and course on the space allowed at the bottom of each answer sheet. Collect the answer sheets for each test separately.

APPENDIX D

Test Instructions for the Subjects

Reacquaint yourself with the answer sheets provided. There is a list of emotions placed in alphabetical order for each item. The first test will consist of instances of emotions expressed in the vocal mode of communication. In each instance the verbal content will be controlled so that only the tone of voice will indicate the emotion. Attend carefully to each instance of emotion and choose from among the list of nine emotions the best answer.

The second test will consist of instances of emotion expressed in the combined vocal-facial mode of communication. As in the first test, the verbal content will be controlled so that the only cues to the intended emotion will be found in the tone of voice and facial expression. Attend carefully to each instance of emotion and choose from amongst the list of ten emotions the best answer.

Each emotion could appear once, more than once, or not at all. Work quickly and choose the first answer that comes to mind. There will be no replays.

APPENDIX E

Answer Sheet for Test One

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Affection															
Anger															
Boredom															
Cheerfulness															
Impatience															
Joy															
Sadness															
Satisfaction															
Neutral															

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Affection															
Anger															
Boredom															
Cheerfulness															
Impatience															
Joy															
Sadness															
Satisfaction															
Neutral															

	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Affection															
Anger															
Boredom															
Cheerfulness															
Impatience															
Joy															
Sadness															
Satisfaction															
Neutral															

Name.....

Course.....

Date.....

T E S T O N E

APPENDIX F

Answer Key for Test One

1. Anger	16. Neutral	31. Affection
2. Sadness	17. Impatience	32. Boredom
3. Boredom	18. Boredom	33. Cheerfulness
4. Joy	19. Affection	34. Satisfaction
5. Satisfaction	20. Joy	35. Joy
6. Neutral	21. Anger	36. Impatience
7. Impatience	22. Satisfaction	37. Sadness
8. Sadness	23. Neutral	38. Joy
9. Boredom	24. Impatience	39. Anger
10. Cheerfulness	25. Neutral	40. Satisfaction
11. Affection	26. Joy	41. Affection
12. Sadness	27. Affection	42. Anger
13. Cheerfulness	28. Boredom	43. Sadness
14. Satisfaction	29. Anger	44. Impatience
15. Cheerfulness	30. Neutral	45. Cheerfulness

APPENDIX G

Answer Sheet for Test Two

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Affection															
Amusement															
Anger															
Boredom															
Despair															
Determination															
Disgust															
Fear															
Impatience															
Joy															

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Affection															
Amusement															
Anger															
Boredom															
Despair															
Determination															
Disgust															
Fear															
Impatience															
Joy															

	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Affection															
Amusement															
Anger															
Boredom															
Despair															
Determination															
Disgust															
Fear															
Impatience															
Joy															

Name.....

Course.....

Date.....

T E S T T W O

APPENDIX H

Answer Key for Test Two

1. deleted	16. deleted	31. Boredom
2. deleted	17. deleted	32. Affection
3. deleted	18. Anger	33. Amusement
4. deleted	19. Affection	34. Anger
5. Despair	20. Affection	35. Amusement
6. Amusement	21. Affection	36. Despair
7. Disgust	22. Determination	37. Anger
8. Despair	23. Amusement	38. Determination
9. Impatience	24. Fear	39. Impatience
10. Affection	25. Anger	40. Despair
11. deleted	26. Impatience	41. Determination
12. Amusement	27. Despair	42. Disgust
13. Disgust	28. Boredom	43. Fear
14. Joy	29. Joy	44. Affection
15. Despair	30. Despair	45. deleted

APPENDIX I

APPENDIX I

Raw Data from Tests One and Two

1. Control Group
2. Experimental Group

1. Control Group

SUBJECT	TEST ONE		TEST TWO	
	Pre-Test	Post-Test	Pre-Test	Post-Test
1	16	22	18	19
2	22	18	20	20
3	18	24	21	21
4	20	20	25	24
5	23	22	24	25
6	19	16	25	25
7	22	25	22	25
8	20	22	22	26
9	20	24	22	21
10	25	16	25	27
11	15	18	16	17
12	22	25	22	26
13	15	24	23	23
14	22	22	24	21
15	23	18	20	22
16	16	17	19	20
17	23	27	24	27
18	19	21	22	23
19	14	19	19	25
20	23	21	22	22
21	18	19	22	25
22	12	18	19	19
23	26	24	21	22
24	25	25	21	16
25	19	20	25	20
26	15	27	24	26
27	12	9	19	14
28	15	17	24	26
29	15	13	27	30
30	16	16	25	28

2. Experimental Group

SUBJECT	TEST ONE		TEST TWO	
	Pre-Test	Post-Test	Pre-Test	Post-Test
1	19	18	28	30
2	22	21	24	22
3	17	13	18	16
4	16	20	15	18
5	14	21	20	24
6	15	18	20	25
7	12	18	16	22
8	21	30	22	26
9	9	13	15	21
10	25	21	22	18
11	16	17	23	25
12	21	22	23	25
13	18	27	20	21
14	24	21	26	24
15	26	29	23	27
16	15	11	14	18
17	24	17	14	17
18	18	20	15	17
19	22	25	22	19

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